

Patent Claims

1. Medical-technology product with a layer of a hybrid complex material composed of a branched amphiphilic macromolecule and of a metal nanoparticle, the layer having been provided at least on the surface and on the surface at least on a portion of the surface.
2. Medical-technology product according to Claim 1, wherein each metal nanoparticle has been surrounded in the manner of a capsule by at least one branched amphiphilic macromolecule.
3. Medical-technology product according to Claim 1, wherein the amphiphilic macromolecule is an amphiphilic polyalkyleneimine.
4. Medical-technology product according to Claim 1, wherein the amphiphilic macromolecule is an amphiphilic polyalkyleneimine with a degree of branching of 20% to 90%.
5. Medical-technology product according to Claim 1, wherein the amphiphilic macromolecule is an amphiphilic polyalkyleneimine that has alkyl-substituted secondary or tertiary amino groups.
6. Medical-technology product according to Claim 1, wherein the amphiphilic macromolecule is a branched amphiphilic polyalkyleneimine which has amide groups, where the N atoms of the amide groups derive from the polyalkyleneimine.
7. Medical-technology product according to Claim 1, wherein the amphiphilic macromolecule is a branched amphiphilic polyalkyleneimine which has amide groups directed away from the metal nanoparticle and where the N atoms of the amide groups derive from the polyalkyleneimine.
8. Medical-technology product according to Claim 6, wherein the amide groups have an aliphatic radical of a fatty acid having from 6 to 22 carbon atoms.

9. Medical-technology product according to Claim 6, wherein the amide groups have an aliphatic radical of a fatty acid, oriented towards the outside, having from 6 to 22 carbon atoms.
10. Medical-technology product according to Claim 1, wherein the molecular weight of the macromolecule is from 800 to 20 000.
11. Medical-technology product according to Claim 1, wherein the metal nanoparticle is a silver nanoparticle or a copper nanoparticle.
12. Medical-technology product according to Claim 3, wherein the metal nanoparticle is a silver nanoparticle with a ratio of silver atoms to nitrogen atoms in direct contact with the silver atoms is from 1:2 to 1:10.
13. Medical-technology product according to Claim 1, wherein the diameter of the hybrid complex is from 0.5 to 10 nm.
14. Medical-technology product according to Claim 1, wherein the diameter of the hybrid complex is about 2 nm.
15. Medical-technology product according to Claim 1, wherein the product is a temporary or long-lasting implant for the body of a human or of an animal.
16. Medical-technology product according to Claim 1, wherein the product is a medical instrument.
17. Medical-technology product according to Claim 1, wherein the material of the product is metal.
18. Medical-technology product according to Claim 1, wherein the material of the product is non-resorbable or at least to some extent resorbable polymers.

19. Medical-technology product according to Claim 1, wherein the material of the product is ceramic.
20. Medical-technology product according to Claim 1, wherein the product is sterilizable.
21. Medical-technology product with a biocide in the form of a hybrid complex material composed of a branched amphiphilic macromolecule and of a metal nanoparticle.
22. Medical-technology product according to Claim 21, wherein the biocide has been applied to at least a portion of the surface of the medical-technology product.
23. Medical-technology product according to Claim 21, wherein the biocide has been incorporated into the interior of the medical-technology product.
24. Medical-technology product according to Claim 21, wherein the biocide has been applied to at least one portion of the surface and into the interior of the medical-technology product.
25. Medical-technology product according to Claim 21, wherein each metal nanoparticle has been surrounded in the manner of a capsule by at least one branched amphiphilic macromolecule.
26. Process for producing a hybrid complex material composed of a branched amphiphilic macromolecule and of a metal nanoparticle by dissolving a metal compound in a solution of an amphiphilic polyalkyleneimine with complexing, followed by reduction of the metal compound.
27. Process according to Claim 26, wherein each metal nanoparticle has been surrounded in the manner of a capsule by at least one branched amphiphilic macromolecule.

28. Process according to Claim 26, wherein the metal compound is a silver salt.
29. Process for producing medical-technology products according to Claim 1, wherein the hybrid complex material is applied from outside to the product.
30. Process for producing medical-technology products according to Claim 1, wherein the hybrid complex material is applied from outside to the product in the form of a solution.
31. Process for producing medical-technology products according to Claim 1, wherein the hybrid complex material is added to the polymer material of the product during its production.
32. Process according to Claim 31, wherein the hybrid complex material is mixed and moulded with the material used to produce the product.
33. Process according to Claim 31, wherein the hybrid complex material is mixed and spun with the material used to produce the product.